SOUTHERN PINE BEETLE

PHEROMONE TRAPPING REPORT, 2022

South Carolina
Forestry Commission

Executive Summary

Southern pine beetle (SPB) is one of the most destructive insects to southern yellow pine. The South Carolina Forestry Commission has conducted annual spring pheromone trapping since 1986 to monitor SPB populations and predict the damage they may cause in the upcoming season. Traps were deployed in 32 counties in 2022. Based on the data from these traps we predict increasing or high SPB activity in Edgefield County and static or moderate SPB activity in McCormick and Berkeley counties. The remainder of the state is predicted to have little significant SPB activity. SPB was reported in half of the counties trapped, and clerid predators have decreased from the previous year. The National Weather Service predicts warmer weather and normal to increased rainfall in the region over the season; however, we are already experiencing prolonged periods of higher-than-normal temperatures, and much of the state is suffering from a deficit of water. We advise monitoring stands for SPB in Edgefield, McCormick, Pickens and Berkeley counties. The Forest Health Division will conduct aerial surveys in these and other counties.

Introduction and Methodology

A total of 32 SC counties were trapped for SPB in 2022 using revised protocol devised by Billings, et al., 2017. The previous protocol called for two attractants per trap: frontalin and alpha pinene (Sirex lure), and the revised protocol calls for a third attractant, *endo*-brevicomin, to be placed 10-12' away from the trap. Prior studies indicated the addition of the third attractant is on average 6.54 times more attractive to SPB and .97 times less attractive to clerid (SPB's main insect predator) when compared to using frontalin and Sirex lures alone. The SPB prediction chart was revised to account for the increased attractiveness to SPB. The protocol includes monitoring three pheromone traps in each county for a 35-day period during early spring. Insects captured in each trap are returned to the laboratory for identification and analysis. The total number of trap days and SPB and clerid beetles caught are summed for each trap. The average number of SPB caught per trap per day and percent SPB are used to predict the population trend for each county and region and for the whole state. In the past, such surveys have had a success rate of more than 80% in predicting the degree of SPB infestation for the following summer.

Results

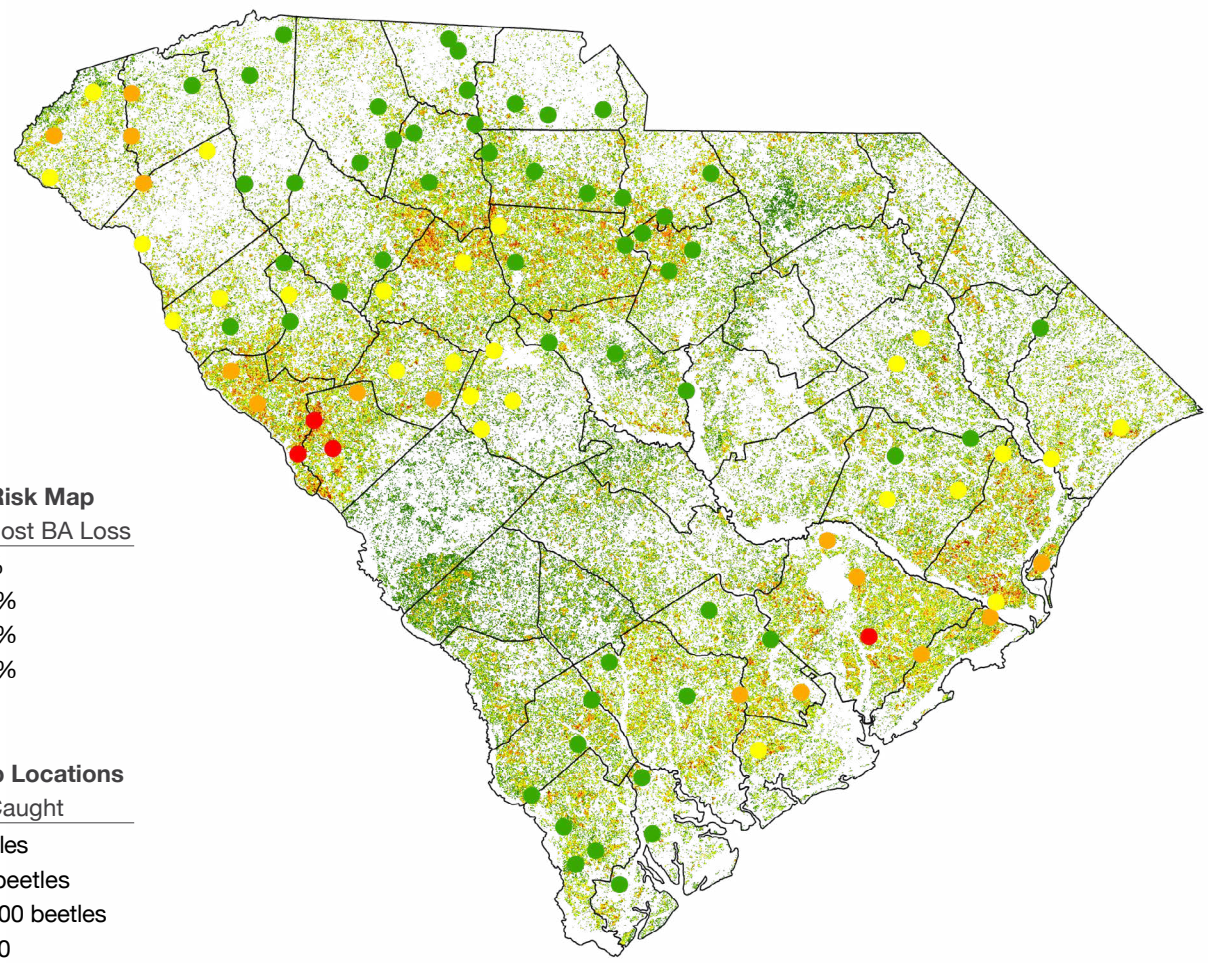
Based on these results, we predict SPB activity in Edgefield County, and for McCormick, Pickens and Berkeley counties to experience some SPB activity, but their predictions are considered "static or moderate" on the prediction chart. Activity in Berkeley County will almost certainly occur in the Francis Marion National Forest where there has been SPB activity since 2019 on older pines growing in standing water. The statewide and regional average predictions remain "declining or low." The statewide SPB caught per trap per day was 4.35 and made up 79% of the total catch. The number of SPB is approximately equivalent to 2021 (taking into account the increased attractiveness of the lures) which was 1.39, but the proportion of clerids has dropped considerably from 79% to 30%. Piedmont counties caught 83% of the SPB and 86% of the clerid beetles. The coastal plain caught 17% of the SPB and 14% of the clerid beetles. These results are for entire counties, and there is always the possibility of sporadic and localized beetle activity in counties with overall predictions of low population levels.

SPB traps were placed in 32 counties in South Carolina in 2022.

SPB activity in Berkeley County.

SPB activity in Berkeley County.

South Carolina Forestry Commission Southern Pine Beetle Trapping



Review of 2021

2021 was mild, temperature-wise, and the state received moderate amounts of rain during the growing season. There was SPB activity in the Francis Marion National Forest, but this is mostly confined to trees subject to long periods in standing water.

SC's 2022 Bark Beetle Prediction

Predicting SC bark beetle activity for the summer of 2022 is based on current and predicted weather, current drought status per region, activity in preceding years and SC's 2022 pheromone trapping data. For the 2022 summer of the Southeastern U.S., the National Weather Service is predicting slightly above-average temperatures and slightly above-average rainfall. There is currently a drought impacting the coastal region, and this may cause SPB populations to increase there, but the heat will likely slow them down considerably. Most beetle activity throughout the state of SC is likely to be attributable to *Ips* and black turpentine beetles (BTB) in susceptible pine stands that are overstocked, over-mature or stagnant, have poor or excessive drainage, or have littleleaf, annosus or other root diseases causing stress. *Ips* thrive in stressed trees and high temperatures, completing their life cycle in as little as 21 days. Often, by the time you realize you have an *Ips* spot, they have completed their life cycle and have dispersed. Control tactics employed for SPB such as "cut and leave" and "salvaging" do not work for *Ips* and BTB since both readily breed in cut pine tops, boles and stumps. During a summer thinning, we recommend all pine tops to be chipped and removed from the site or at least kept at the logging deck. For more information on either beetle, please follow this link: http://www.state.sc.us/forest/idbeetles.pdf.

SC's SPB Population Trend

SPB activity has leveled out regionally, with SPB spots in Mississippi, Alabama and Georgia. Populations are marginally increasing in South Carolina.

Recommendations for Landowners and Foresters

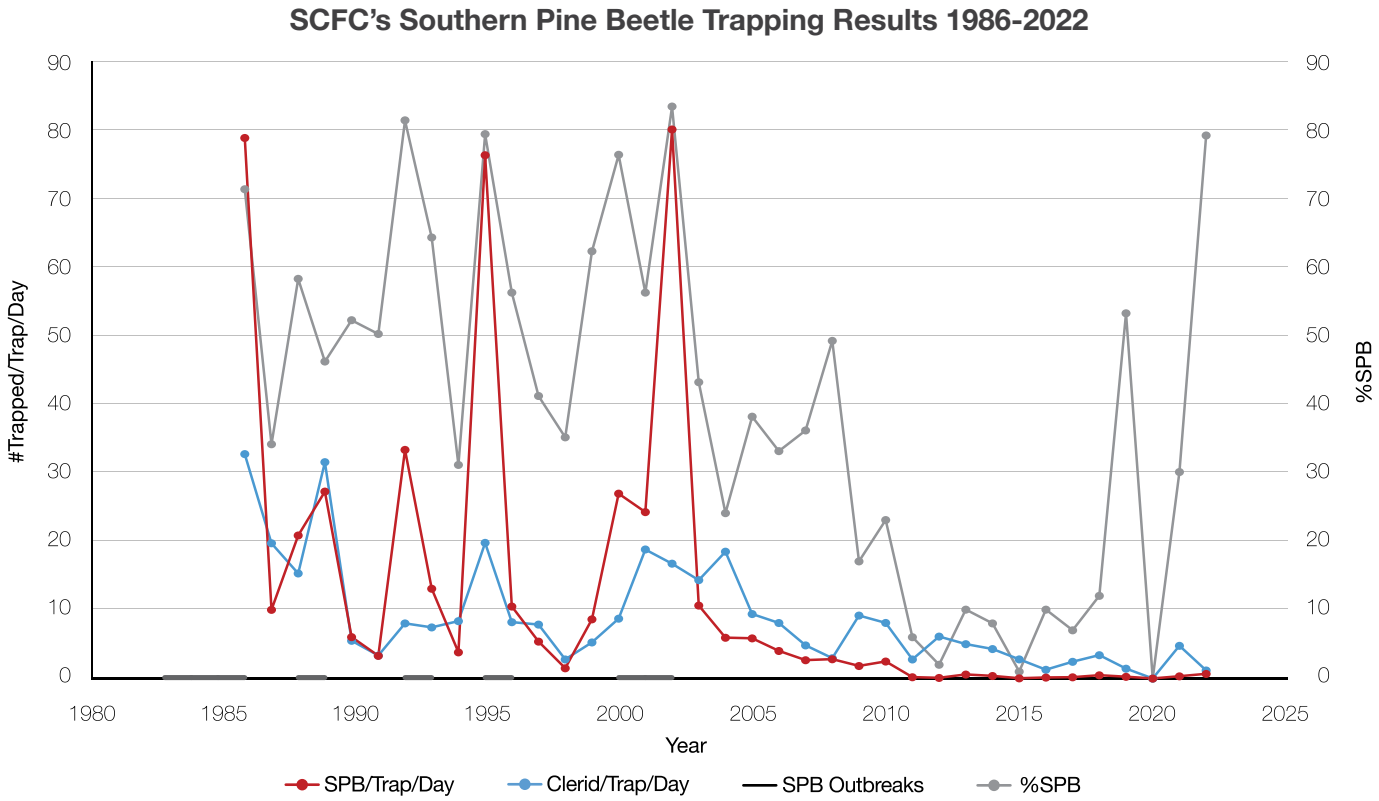
Although current SPB populations are comparatively low, we encourage foresters and forest landowners to manage for regulated forests by evenly distributing their

pine acreage among age classes, thin on a timely basis, and consider harvesting at-risk stands sooner. When regenerating pine stands, it is important to plant the correct species and density for the site, control natural pine regeneration or have a plan in place to address it; and consider available wood markets or lack thereof. The SPB cost-share program currently has funds available for regenerating pine stands at lower densities and pre-commercial thinning young, over-dense pine stands. This program is more suited for areas and acreages outside of healthy pulpwood markets which is where we have suffered the most loss to SPB. If interested in applying, please contact your county's SCFC project forester: https://www.scfc.gov/about-us/contacts/.


SPB galleries.

Summary

We predict that Edgefield County will experience SPB activity, and Berkeley and McCormick counties may experience some SPB activity, with predictions in the "static or moderate" range for both counties. The statewide and regional average SPB predictions are considered "declining–low." High summer temperatures should restrict SPB dispersal in the state, but clerid populations have declined. Most beetle activity within SC will mostly be attributable to *Ips* and BTB. Higher than average rainfall that is predicted by the National Weather Service may overcome high summer temperatures and reduce *Ips* and BTB activity in most counties. If you suspect bark beetle activity, please contact the SCFC for identification and the best course of action. Employing the "cut and leave" and "salvaging" techniques could lead to more pine loss if SPB is not the culprit. It is difficult to predict the degree of loss to SPB and other bark beetles, but our best guess for SC in 2022 is for a loss between $300,000 and $500,000.



* Beginning in 2017 and still in continuation, *endo*-Brevicomin was added to the previous used attractants of Frontalin and Sirex. A study found this new attractant combination on average was 6.54X more attractive to SPB and .97X less attractive to Clerid. To better compare previous years to 2017 and after, the number of SPB Trapped/Trap/Day was divided by 6.54, but the number of Clerid was left the same.

Contact the SCFC Insect & Disease Staff

Please contact us if you have any questions or if we can provide additional information.

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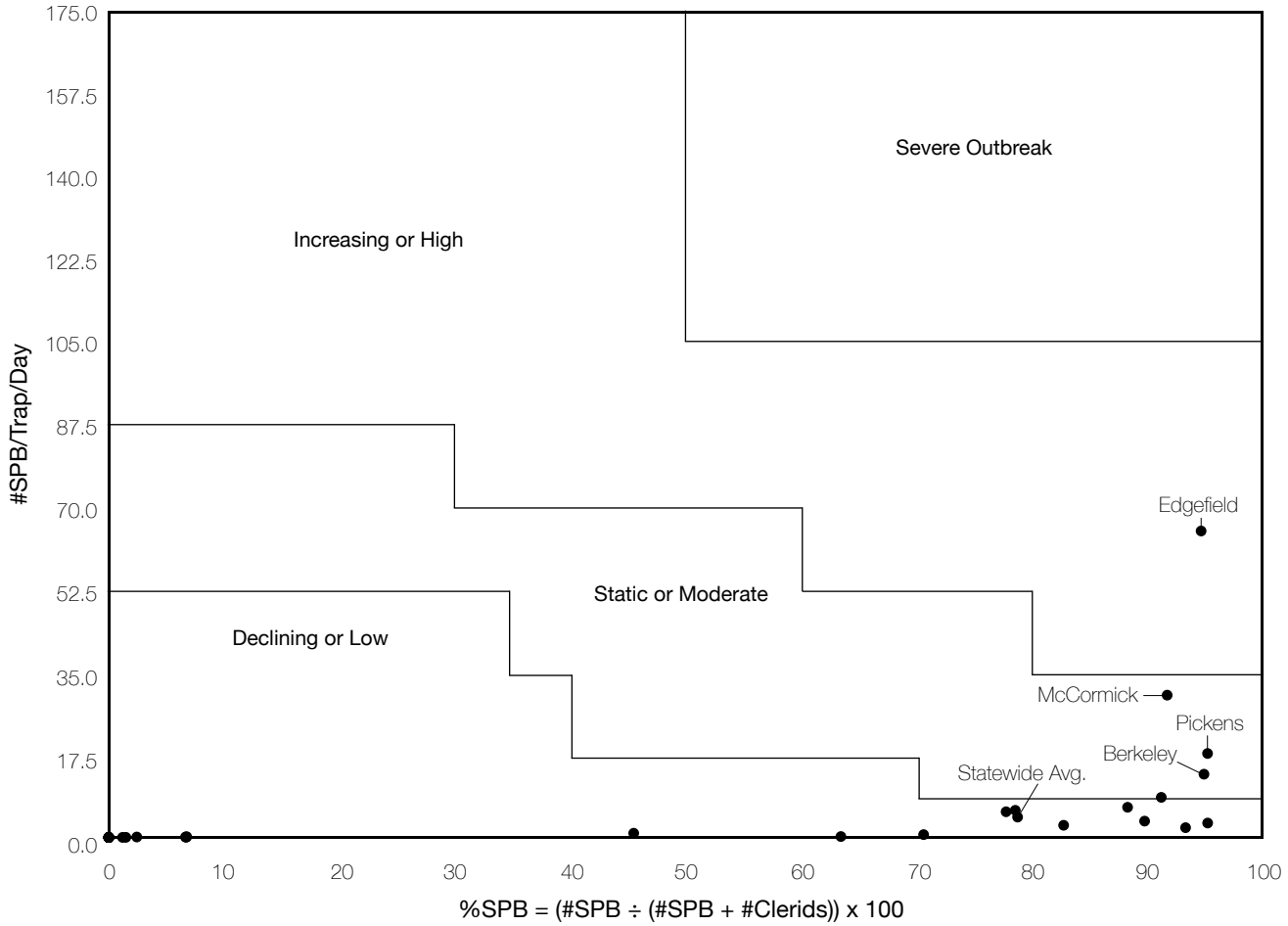
SPB pitch tubes.

SCFC Southern Pine Beetle Pheromone Trapping Survey, 2022
SPB Prediction Chart: Frontalin + Sirex Lure + *endo*-Brevicomin



SCFC Southern Pine Beetle Pheromone Trapping Results, 2022

Severe Outbreak Prediction Trend (1)

No counties in South Carolina are predicted to have a severe outbreak in 2022.

Increasing - High Prediction Trend (2)

County	Trapping Days	#SPB	#Clerids	% SPB	SPB/Day
Edgefield	84	5,507	293	94.95%	65.56

Static - Moderate Prediction Trend (3)

County	Trapping Days	#SPB	#Clerids	% SPB	SPB/Day
Berkeley	102	1380	69	95.2%	13.53
McCormick	84	2557	235	92%	30.44
Pickens	84	1509	31	95.51%	17.96

Declining - Low Prediction Trend (4)

County	Trapping Days	#SPB	#Clerids	% SPB	SPB/Day
Abbeville	133	6	83	6.74%	0.05
Anderson	90	277	13	95.52%	3.08
Beaufort	91	0	8	0.00%	0.00
Charleston	70	244	27	90.04%	3.49
Cherokee	111	0	30	0.00%	0.00
Chester	87	0	231	0.00%	0.00
Colleton	77	161	11	93.60%	2.09
Dorchester	81	73	87	45.63%	0.90
Fairfield	75	1	82	1.20%	0.01
Florence	90	7	98	6.67%	0.08
Georgetown	75	435	117	78.80%	5.80
Greenville	86	0	50	0.00%	0.00
Greenwood	49	1	66	1.49%	0.02
Hampton	87	0	16	0.00%	0.00
Horry	85	51	21	70.83%	0.60
Jasper	78	0	13	0.00%	0.00
Kershaw	92	0	213	0.00%	0.00
Lancaster	93	0	386	0.00%	0.00
Laurens	126	0	254	0.00%	0.00
Lexington	81	13	179	6.77%	0.16
Newberry	77	7	280	2.44%	0.09
Oconee	84	720	67	91.49%	8.57
Richland	123	0	38	0.00%	0.00
Saluda	84	542	70	88.56%	6.45
Spartanburg	84	0	66	0.00%	0.00
Union	84	0	21	0.00%	0.00
Williamsburg	73	14	8	63.64%	0.19
York	84	0	71	0.00%	0.00
State Totals	**2662**	**11,590**	**3,121**	**79%**	**4.35**
Coastal Totals	**909**	**2,365**	**475**	**83%**	**2.60**
Piedmont Totals	**1,753**	**9,628**	**2,680**	**78%**	**5.49**

Severe Outbreak: High probability for major losses
Increasing - High: Greater than 100% increase from previous year
Static - Moderate: Less than a 50% decline to less than 100% increase from previous year
Declining - Low: Greater than a 50% decline from previous year

Cover photo by Frank M. Riley, Jr., Georgia Forestry Commission, Bugwood.org